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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/777,858 | 02/12/2004 | W. Denis Markiewicz | FSU 10419.2 | 7172 |
| 321 | 7590 | 10/15/2004 | EXAMINER | |
| SENNIGER POWERS LEAVITT AND ROEDEL ONE METROPOLITAN SQUARE 16TH FLOOR ST LOUIS, MO 63102 | | | ROJAS, BERNARD | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2832 | |

DATE MAILED: 10/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|--|--------------------------------------|--|--|
| <p align="center">Office Action Summary</p> | Application No. 10/777,858 | Applicant(s) MARKIEWICZ ET AL. | |
| | Examiner Bernard Rojas | Art Unit 2832 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 23-25 is/are rejected.
- 7) ☒ Claim(s) 20-22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Koyama et al. [US 5,606,300].

Claims 1, 24 and 25 Koyama et al. discloses a superconducting magnet comprising a plurality of superconducting coils [figure 2], said coils [8] being impregnated with epoxy [7] and nested within each other, an innermost one of the nested coils having a bore there through defining a bore width of the magnet, said bore width being greater than approximately 100 millimeters, said nested coils being electrically connected in series and cooled to an operating temperature less than approximately 4 degrees K [abs].

Claim 2, is a product-by-process claim. As previously discussed, Koyama et al. discloses the structure of at least one superconducting coil being impregnated with epoxy.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-8 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama et al. [US 5,606,300] in view of ITO [JP 58,194,309 A].

Claims 3 and 4, is a product-by-process claim. As previously discussed, Koyama et al. discloses the claimed invention with the exception of an external reinforcement on the coil.

ITO discloses a superconducting coil with the coil being wound with a reinforcement wire [6].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to wrap the coil of Koyama et al. with the reinforcement wire of Ito in order to prevent the movement of a superconductive wire due to electromagnetic force thereby improving stability [ITO abs].

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Claim 5, ITO discloses that the external reinforcement includes a reinforcement wire wound around the at least one of the superconducting coils to be reinforced [figure 2].

Claim 6. ITO discloses that the reinforcement wire is electrically insulated [abs, wire is made of fiber reinforced plastic]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have this insulation withstand high temperatures since it is well known the superconducting coils create large amounts of heat.

Claim 7, ITO discloses the high temperature insulation as a fiber. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a glass fiber braided around the plastic, since applicant has not disclosed that a glass fiber braid solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the disclosed fiber reinforcement.

Claim 8, ITO discloses that the reinforcement wire is electrically insulated to prevent electrical short circuits of the reinforcement wire to itself [abs, wire is made of fiber reinforced plastic].

Claim 23, is a product-by-process claim. Koyama et al. discloses a superconducting magnet comprising a plurality of superconducting coils [figure 2], said coils [8] being impregnated with epoxy [7] and nested within each other, said nested coils being electrically connected in series and cooled to an operating temperature less than approximately 4 degrees K [abs].

Koyama et al. fail to teach an external reinforcement of the coil.

ITO discloses a superconducting coil with the coil being wound with a reinforcement wire [6].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to wrap the coil of Koyama et al. with the reinforcement wire of Ito in order to prevent the movement of a superconductive wire due to electromagnetic force thereby improving stability [ITO abs].

Claims 3, 4, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama et al. [US 5,606,300] in view of Pourrahimi et al. [US 6534718 B1].

Claims 3 and 4, is a product-by-process claim. As previously discussed, Koyama et al. discloses the claimed invention with the exception of an external reinforcement on the coil.

Pourrahimi et al. discloses a superconducting coil with the coil being wound with a reinforcement wire [14].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to wrap the coil of Koyama et al. with the reinforcement wire of Ito in order to prevent the movement of a superconductive wire due to electromagnetic force thereby improving stability.

Claim 9, Pourrahimi et al. discloses the reinforcement wire is steel [col. 5 lines 1-5].

Claim 10, Pourrahimi et al. discloses the reinforcement wire includes steel and copper [col. 5 lines 1-5].

Claims 12-17 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama et al. [US 5,606,300] in view of Huang et al. [US 6,147,844 A].

Claim 12, Koyama et al. discloses the claimed invention with the exception of an active protection circuit for protecting one or more of the coils in response to a quench in the magnet

Huang et al. discloses an active protection circuit [figures 2 and 3] for protecting one or more of the coils in response to a quench in the magnet, said protection circuit including at least one heater element for heating the protected coil [figure 1]

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the quench protection of Huang et al for the superconductive coil of Koyama et al. in order to reduce to possibility of damage to the superconductive coil due to quenching.

Claims 13-16, Koyama et al. in view of Huang et al. disclose the claimed invention except for the design of the heater element. It would have been obvious to one having ordinary skill in the art at the time the invention was made to alter the design of the heater element, i.e. a substantially flat metallic braid or a resistive metal, in order to obtain a desired heating characteristic. Since applicant has not disclosed that any of the claimed heater compositions solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the disclosed heater composition.

Claim 17, is a product-by-process claim. Huang et al. discloses the heater element is positioned in thermal contact with the protected coil [abs].

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Claim 18, is a product-by-process claim. Huang et al. discloses the heater element is positioned in thermal contact with the protected coil [abs].

Allowable Subject Matter

Claims 20-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

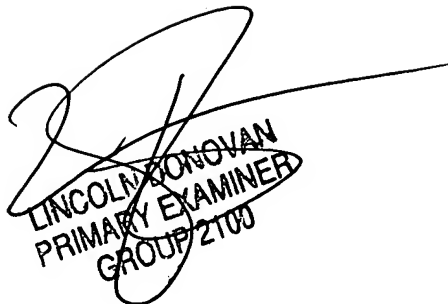
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Rojas whose telephone number is (571) 272-1998. The examiner can normally be reached on M-F 8-4:00), every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin G. Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in black ink, consisting of a large, stylized 'L' followed by a horizontal line extending to the right.

LINCOLN DONOVAN
PRIMARY EXAMINER
GROUP 2T00